FACT-FILE

Patterns of Research Spending

Basic Research Expenditures by Performer

(Amounts in millions of dollars)

Year	Colleges and universities	Federal centers[1]	Other non-profit institutions	Federal government laboratories	Industry[2]	Total
1960	$ 433	$ 97	$131	$160	$376	$1,197
1961	536	115	149	206	395	1,401
1962	659	136	190	251	488	1,724
1963	814	159	215	255	522	1,965
1964	1,003	191	232	314	549	2,289
1965	1,138	208	253	364	592	2,555
1966	1,303	227	275	385	624	2,814
1967	1,457	250	285	418	629	3,039
1968	1,649	276	297	410	642	3,274
1969	1,711	275	305	516	618	3,425
1970	1,796	269	305	541	602	3,513
1971	1,914	260	322	491	590	3,577
1972	2,022	250	345	538	593	3,748
1973	2,055	297	357	537	631	3,877
1974	2,153	285	396	611	699	4,144
1975	2,410	309	407	682	719	4,527
1976	2,547	359	439	719	817	4,881
1977 prelim.	2,787	402	479	866	906	5,440
1978 est. ...	3,165	410	520	975	975	6,045

Applied Research Expenditures by Source

(Amounts in millions of dollars)

Year	Colleges and universities	Other non-profit institutions	Federal government	Industry	Total
1960	$ 66	$ 40	$1,688	$1,226	$ 3,020
1961	69	47	1,754	1,195	3,065
1962	70	58	2,067	1,470	3,665
1963	72	62	2,125	1,483	3,742
1964	77	61	2,397	1,593	4,128
1965	88	73	2,524	1,654	4,339
1966	89	89	2,582	1,841	4,601
1967	102	95	2,717	1,889	4,803
1968	97	99	2,841	2,125	5,162
1969	105	106	2,811	2,320	5,342
1970	98	115	3,074	2,426	5,713
1971	115	122	3,114	2,492	5,843
1972	141	125	3,172	2,614	6,052
1973	174	140	3,474	2,889	6,677
1974	203	156	3,659	3,326	7,344
1975	224	177	4,027	3,519	7,947
1976	290	211	4,592	3,992	9,085
1977 prelim.	307	228	4,931	4,414	9,880
1978 est. ...	340	250	5,285	4,850	10,725
1979 est. ...	n/a	n/a	n/a	n/a	11,750

Basic Research Expenditures by Source

(Amounts in millions of dollars)

Year	Colleges and universities	Other non-profit institutions	Federal government	Industry	Total
1960	$ 72	$ 68	$ 715	$342	$1,197
1961	85	81	874	361	1,401
1962	102	97	1,131	394	1,724
1963	121	108	1,311	425	1,965
1964	144	114	1,597	434	2,289
1965	164	121	1,809	461	2,555
1966	196	129	1,979	510	2,814
1967	223	140	2,184	492	3,039
1968	276	149	2,314	535	3,274
1969	298	162	2,425	540	3,425
1970	350	182	2,453	528	3,513
1971	400	196	2,434	547	3,577
1972	414	218	2,553	563	3,748
1973	408	224	2,640	605	3,877
1974	432	237	2,826	649	4,144
1975	479	273	3,087	688	4,527
1976	481	285	3,355	760	4,881
1977 prelim.	527	317	3,756	840	5,440
1978 est. ...	600	360	4,190	895	6,045
1979 est. ...	n/a	n/a	n/a	n/a	6,700

Total Research Expenditures by Source

(Amounts in millions of dollars)

Year	Colleges and universities	Other non-profit institutions	Federal government	Industry	Total
1960	$138	$108	$2,403	$1,568	$ 4,217
1961	154	128	2,628	1,556	4,466
1962	172	155	3,198	1,864	5,389
1963	193	170	3,436	1,908	5,707
1964	221	175	3,994	2,027	6,417
1965	252	194	4,333	2,115	6,894
1966	285	218	4,561	2,351	7,415
1967	325	235	4,901	2,381	7,842
1968	373	248	5,155	2,660	8,436
1969	403	268	5,236	2,860	8,767
1970	448	297	5,527	2,954	9,226
1971	515	318	5,548	3,039	9,420
1972	555	343	5,725	3,177	9,800
1973	582	364	6,114	3,494	10,554
1974	635	393	6,485	3,975	11,488
1975	703	450	7,114	4,207	12,474
1976	771	496	7,947	4,752	13,966
1977 prelim.	834	545	8,687	5,254	15,320
1978 est. ...	940	610	9,475	5,745	16,770
1979 est. ...	n/a	n/a	n/a	n/a	18,450

[1] Federally funded resarch and development centers administered by universities.
[2] Includes industry-associated federally funded research and development centers.
n/a =not available.

SOURCE: NATIONAL SCIENCE BOARD

Patent-Protection Measure Approved by Senate Unit

WASHINGTON

The Senate Committee on the Judiciary has sent to the full Senate a bill, S 414, that would give small businesses, universities, and other non-profit organizations patent protection for inventions developed in the course of government-supported research.

Hearings on a House of Representatives version of the bill, HR 2414, were expected to be scheduled before Congress adjourns on December 21.

Without strong patent protection, supporters of the liberal patent bill say, inventors and businessmen are unlikely to make the investments required to prepare new discoveries for the marketplace.

The American Council on Education strongly supported the bill, which was introduced last year by Senators Birch Bayh, Democrat of Indiana, and Robert Dole, Republican of Kansas.

"Educational institutions," the A.C.E. said, "are, of course, not organized to manufacture, produce, or market a patentable invention. Accordingly, if university-generated inventions are to be used, such institutions must interest those in the industrial world who have the commercial capability. . . .

"If universities cannot furnish an exclusive license to developers for a limited period and thereby secure the investment of necessary capital, inventions are less likely to be developed to the point of marketability, and thus the public is less likely to receive the benefits from such inventions."

Some consumer advocates who feel that federally financed innovations should be made generally available tried to counter the university arguments with warnings that researchers and investors would reap windfall profits under the Senate bill.

Supporters of the Dole-Bayh approach say, however, that they have included a safeguard to protect against excessive profits.

The provision would require institutions seeking patent rights to pay the government 15 per cent of their yearly licensing income above $70,000.

—A.C.R.

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News Summary

Articles on inside pages

Starting this year, equal contributions will buy equal pension benefits for men and women under T.I.A.A.-C.R.E.F. plans. Story on Page 2.

The 1980's are being greeted with little enthusiasm by some leaders in higher education. Story on Page 6.

Inflation may force colleges and universities to choose between giving faculty members across-the-board and merit raises. Story on Page 4.

Theatrical techniques are generating new excitement in foreign-language classes. Story on Page 3.

Testing leaders have proposed some "public-interest principles" to guide development of standardized admissions exams. Story on Page 5.

Scientific breakthroughs in the United States may be hindered by lack of investment in university research facilities and equipment. Story on Page 9.

Proposed changes in the allocation of U. S. student aid are prompting criticism. Story on Page 15.

An appeals court has struck down federal rules designed to regulate trade schools' admissions policies. Story on Page 15.

Nominees to top posts in the new Department of Education are expected to be announced later this month. Story on Page 18.

Some 18,000 Iranians in the U. S. on student visas have failed to report to immigration authorities. Story on Page 12.

The Vatican's decision to strip a prominent theologian of his right to teach may spark new debates about academic freedom in West German universities. Story on Page 11.

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FBI Destroys Files, Historians Charge

It and other agencies seek to circumvent 1966 Freedom of Information Act, they say

By Karen J. Winkler

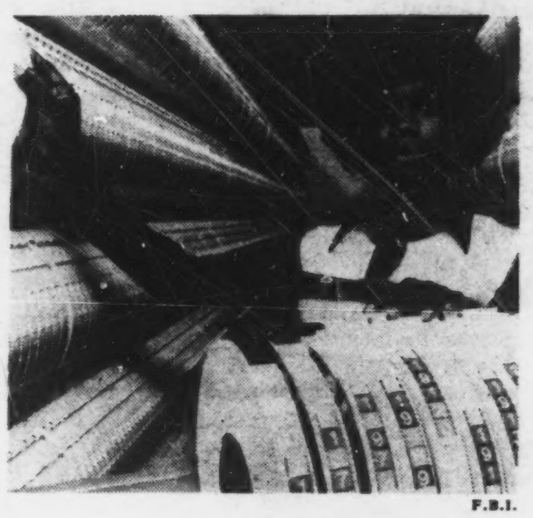
NEW YORK

Some government agencies, particularly the Federal Bureau of Investigation, appear to be destroying documents to avoid having to make them available to scholars and the public under the Freedom of Information Act.

The Freedom of Information Act "is the most powerful tool historians, journalists, researchers, and the public have for prying documents from the grip of secrecy," in the words of Howard Fruchtbaum, a historian at the New School for Social Research and Columbia University's school of public health.

"For well over a year, a movement to weaken the act has developed," Mr. Fruchtbaum told the annual meeting of the American Historical Association here.

"A backlash has been generated among public officials who fear public scrutiny," John Anthony Scott, a historian who teaches at the Rutgers University law school, said at the meeting. "If carried to completion, it will reduce the Freedom of Information Act to a dead letter."



F.B.I.

Computerized files at F.B.I. headquarters

The chief threat is the widespread destruction of government records, panelists here said. They charged that some government agencies were burning their records.

Nor is the National Archives and Record Service—whose job it is to insure the preservation of records of historic value—stopping the destruction, the panelists said.

They also warned that a proposed charter for the F.B.I., now before Congress, would give bureau officials far greater authority to destroy documents.

The Freedom of Information Act, as passed in 1966, provided for the disclosure of most government records, with the exception of such materials as personnel files, investigatory records in trials, and documents affecting national security. It granted the public the right to appeal the closing of records.

Problems quickly became evident. Researchers ran into lengthy delays and high fees for locating materials and reproducing them. They also found that some 40,000 government employees had the power to classify documents as secret.

Moreover, the Supreme Court refused to rule in a lawsuit by Rep. Patsy Mink,

Continued on Page 4, Column 1

Colleges Check Athletes' Academic Records as Scandal over Unearned Credit Spreads

By Lorenzo Middleton

A number of colleges and universities are taking a hard look at the academic records of their athletes, following reports that some players have received credit for courses they never attended.

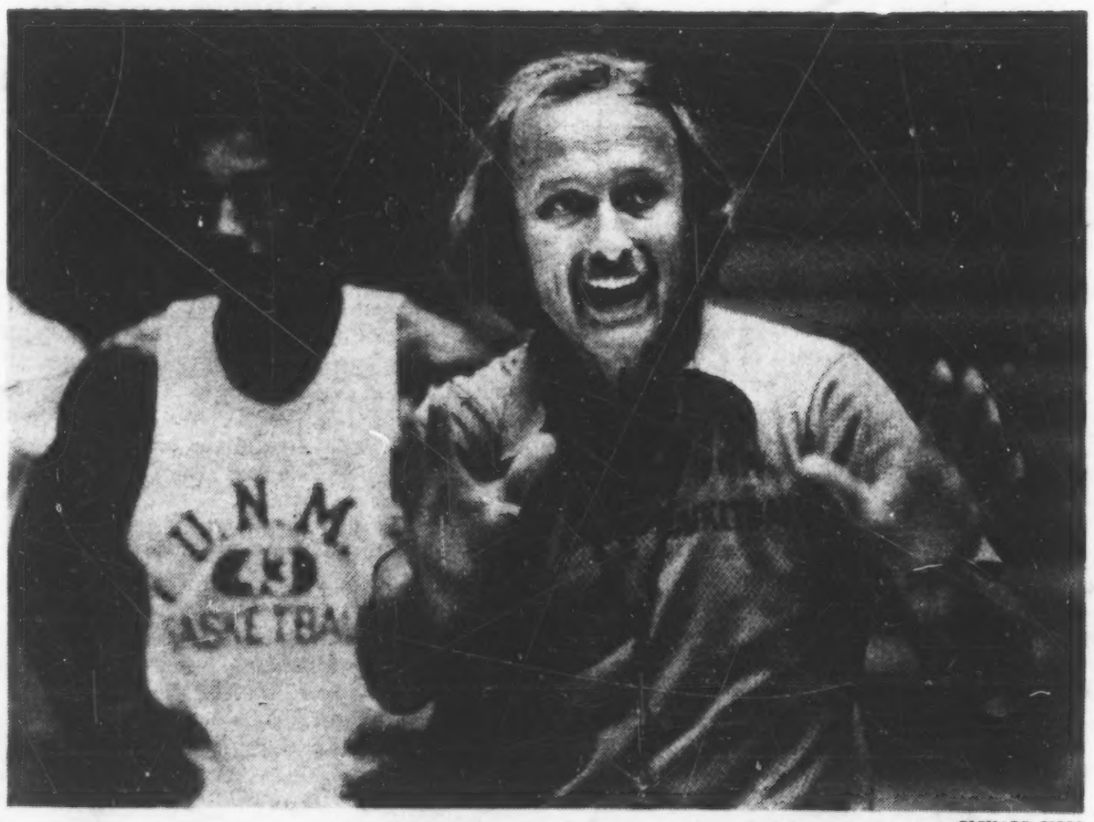
The reports began to spread in the wake of an athletic scandal at the University of New Mexico, where a grand jury is investigating charges that the former basketball coach and his chief recruiter falsified the transcript of a junior-college transfer student through a mail-fraud and bribery scheme.

Coach Norm Ellenberger was fired last month after the university's athletic council found that he had violated regulations of the university, the Western Athletic Conference, and the National Collegiate Athletic Association.

'Laundering' a Phony Transcript

Manny Goldstein, the assistant coach and recruiter, resigned just before he was scheduled to appear before the council.

Mr. Goldstein had recruited Craig Gilbert last summer from Oxnard College, a two-year institution in California. Investigators have charged that Mr. Gilbert did not have enough credits to play basketball as a transfer student, and that Mr. Goldstein forged the lacking credits on a phony transcript from a junior college in New Jersey and attempted to "launder" the transcript through Oxnard.



RICHARD PIPES

New Mexico's ex-coach, Norm Ellenberger

Mr. Gilbert has been declared ineligible to play and reportedly was planning to drop out of school. The university was in the midst of a semester break last week, and Mr. Gilbert could not be located for comment.

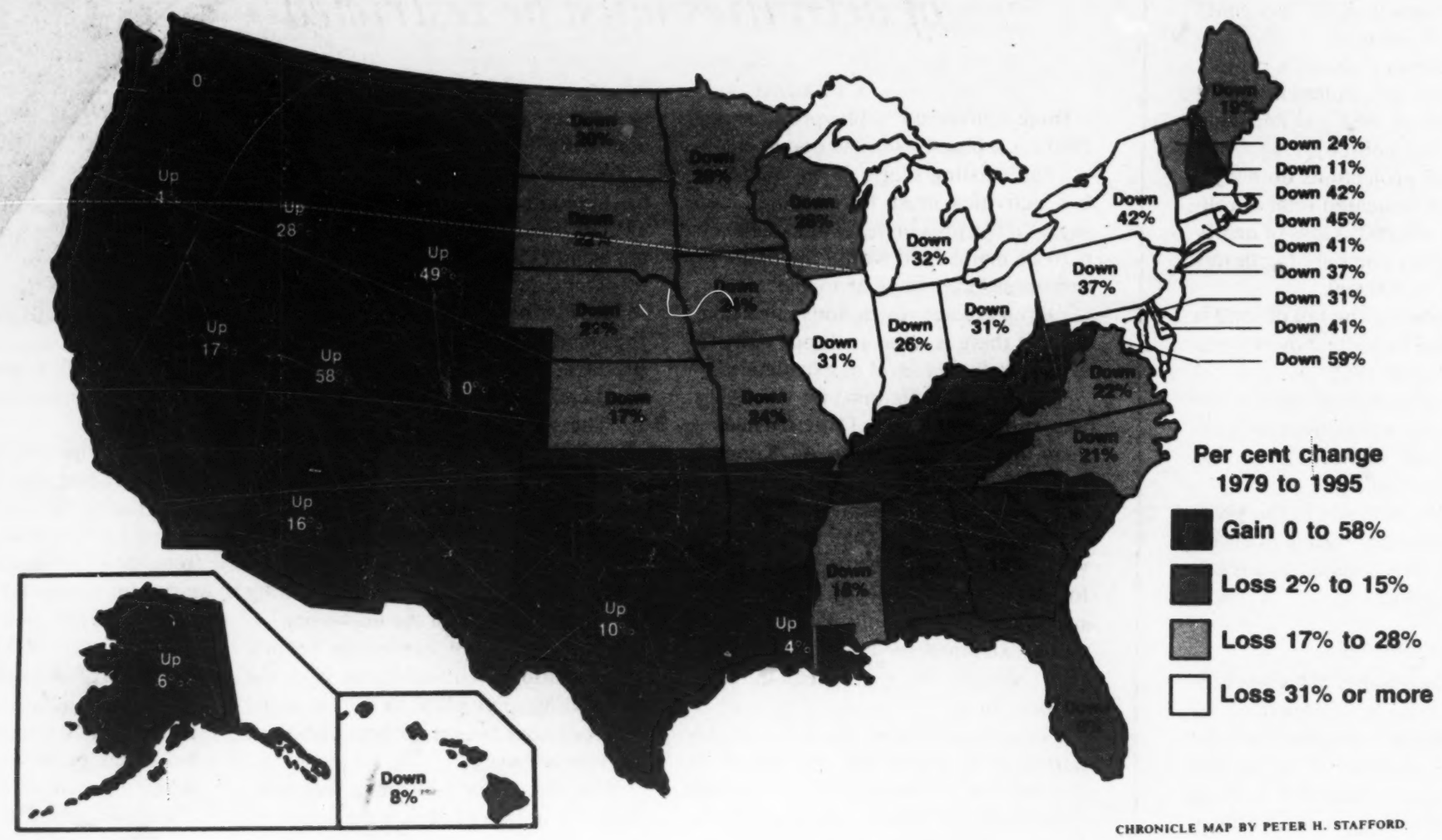
The university's investigation found that

Continued on Page 14, Column 2

FACT–FILE

Changing Numbers in High-School Graduating Classes

Projections show decline in all but 10 states between 1979 and 1995



CHRONICLE MAP BY PETER H. STAFFORD

	1978 (actual)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Alabama	46,509	47,457	46,926	46,302	46,240	44,328	41,663	40,359	39,982	40,940	42,291	44,113	41,850	39,544	39,477	38,533	38,515	41,198
Alaska	5,058	5,482	5,625	5,587	5,563	5,208	5,032	4,960	4,810	5,101	5,365	5,441	5,254	5,163	5,296	5,347	5,559	5,832
Arizona	28,589	29,195	29,312	29,482	29,060	28,359	27,699	27,315	27,413	29,383	30,618	30,982	28,984	29,645	31,648	31,893	32,283	33,733
Arkansas	28,064	28,151	28,565	28,622	28,765	26,963	25,531	24,817	24,659	25,449	26,662	27,437	26,355	25,681	26,448	26,296	26,582	27,638
California	261,698	260,878	256,892	249,082	248,253	234,551	223,839	218,432	217,103	226,228	232,844	220,142	204,182	198,432	207,656	211,415	221,266	231,571
Colorado	37,373	37,265	37,281	36,703	36,392	34,616	32,207	32,495	33,139	34,658	36,581	36,267	33,388	33,433	33,892	34,858	35,578	37,384
Connecticut	39,204	39,051	37,607	37,879	37,154	35,560	33,202	31,543	30,299	30,529	30,560	28,528	25,201	23,554	23,132	22,632	22,403	22,845
Delaware	9,847	9,831	9,419	9,239	8,861	8,334	7,687	6,965	6,797	6,804	6,964	6,683	5,945	5,519	5,596	5,578	5,496	5,817
Florida	91,613	89,033	88,430	88,401	87,573	82,464	80,244	76,421	75,363	78,483	82,590	84,821	81,300	78,546	80,497	77,095	77,211	80,847
Georgia	61,095	64,649	65,444	64,335	65,379	62,747	59,756	57,299	57,457	58,188	60,514	60,293	49,048	46,681	54,360	52,094	51,645	55,014
Hawaii	11,464	11,468	11,611	11,674	11,106	10,360	9,766	9,241	9,168	9,600	10,010	9,712	9,167	9,112	9,192	9,373	9,903	10,526
Idaho	13,301	13,392	13,422	12,857	12,771	12,265	12,015	12,171	12,474	12,994	13,800	14,151	13,473	13,633	14,518	15,079	15,969	17,202
Illinois	140,690	139,153	134,735	130,617	127,968	119,200	112,352	107,546	104,840	105,894	109,078	106,777	97,055	91,963	91,963	92,103	92,611	96,403
Indiana	78,000	78,390	76,349	75,338	74,791	70,126	65,038	63,163	61,604	61,813	63,985	65,178	60,480	57,963	58,920	56,343	55,148	58,222
Iowa	43,726	44,132	42,956	41,893	40,229	37,317	34,959	33,500	32,733	33,242	34,215	33,219	30,695	28,955	30,205	30,787	30,943	33,420
Kansas	32,307	31,680	30,796	28,950	27,763	27,331	25,250	24,449	23,760	24,899	25,485	25,318	23,679	22,748	23,275	23,985	25,102	26,204
Kentucky	41,611	42,241	41,266	41,745	41,033	38,865	36,941	35,633	35,279	36,005	37,336	37,941	34,703	33,076	32,965	33,693	34,117	36,152
Louisiana	47,183	47,635	47,472	47,747	47,611	46,719	46,310	44,722	44,582	46,060	46,838	46,851	45,345	44,054	43,694	44,929	46,007	49,744
Maine	15,364	15,603	15,462	15,734	14,944	14,897	13,910	13,908	13,095	13,571	13,751	14,057	12,728	12,306	11,821	11,917	11,772	12,715
Maryland	61,991	62,116	61,488	62,502	61,682	57,617	54,942	52,992	51,552	51,266	52,201	50,056	45,240	40,830	40,661	40,398	40,351	42,771
Mass.	78,348	78,769	77,644	77,148	76,021	72,468	69,130	66,270	63,977	63,013	62,883	58,647	52,487	48,865	47,395	46,044	44,610	45,889
Michigan	132,759	131,984	127,462	124,342	121,647	114,582	109,163	105,814	102,733	103,705	107,714	104,156	94,750	91,223	88,557	86,312	84,669	89,204
Minnesota	68,414	68,086	67,616	64,910	61,772	57,494	54,164	52,732	51,893	53,145	53,911	51,676	46,707	44,080	45,212	45,860	46,161	48,888
Mississippi	27,665	28,160	27,672	27,669	27,006	26,333	25,200	24,447	24,404	25,084	25,677	24,754	23,145	22,587	22,257	21,945	21,742	22,981
Missouri	64,564	64,761	64,423	62,794	62,687	58,417	54,478	52,309	50,642	52,211	53,456	53,787	48,938	46,247	46,791	46,137	46,366	49,181
Montana	12,184	12,066	12,034	11,480	10,936	10,270	9,859	9,508	9,408	9,756	10,137	10,408	9,491	9,409	10,135	9,968	10,410	10,986
Nebraska	23,052	23,498	22,559	22,196	21,109	19,632	18,461	17,730	17,627	18,244	18,655	18,881	17,886	16,853	17,538	17,510	17,591	18,621
Nevada	8,233	8,763	8,795	8,933	9,118	8,819	8,116	8,050	7,954	8,639	9,076	9,494	8,720	8,401	8,644	8,597	9,507	10,220
N. Hamp.	11,748	11,807	11,719	11,927	11,775	11,337	11,173	10,766	10,911	11,108	11,543	11,655	10,620	10,051	10,110	9,663	9,738	10,512
N. Jersey	97,079	97,643	94,836	93,636	92,592	88,518	84,143	80,233	76,719	77,124	77,844	73,485	65,627	62,016	62,160	60,323	59,723	61,860
N. Mexico	18,444	18,942	18,476	18,097	17,900	16,569	15,481	15,184	14,820	15,004	15,117	14,975	14,880	14,544	14,882	14,700	15,471	16,111
New York	210,720	209,692	201,167	198,731	194,886	185,438	175,476	165,726	158,338	156,975	158,489	144,700	129,018	121,201	120,588	118,893	118,575	120,888
N. Carolina	70,953	71,898	70,550	69,043	69,276	65,500	62,219	61,155	60,277	60,998	63,918	64,656	60,038	57,633	56,357	54,108	53,884	56,499
N. Dakota	10,725	10,707	10,366	10,140	9,392	8,674	8,082	7,767	7,277	7,400	7,949	7,788	7,565	7,263	7,466	7,922	7,997	8,540
Ohio	152,002	151,534	143,851	139,215	137,353	128,542	122,341	118,557	115,430	116,464	120,566	120,670	110,141	103,393	103,241	102,043	100,029	103,912
Oklahoma	39,223	39,745	40,048	39,141	38,187	35,541	33,325	33,232	33,686	35,222	36,753	38,018	36,626	34,785	36,151	36,440	37,252	38,784
Oregon	29,998	30,851	30,515	29,652	29,125	27,850	27,149	27,230	27,571	29,307	30,647	29,943	28,085	27,462	27,890	28,616	29,892	32,147
Penn.	156,918	155,311	146,937	144,919	143,672	135,651	128,981	123,434	118,561	117,898	120,170	115,033	104,578	98,118	96,957	95,348	94746	98,210
Rhode I.	10,884	11,592	11,198	10,864	10,669	10,390	9,688	9,267	8,589	8,447	8,464	8,103	7,261	6,760	6,242	5,905	5,937	6,396
S. Carolina	36,824	37,845	37,829	38,241	38,462	36,860	34,939	33,783	33,305	34,100	35,442	36,977	35,066	34,683	34,335	33,083	33,783	35,338
S. Dakota	11,383	11,171	10,961	10,442	9,869	9,081	8,406	7,979	7,916	7,949	8,352	8,379	7,860	7,726	8,065	8,151	8,410	8,710
Tennessee	47,710	48,406	49,796	50,146	50,544	48,464	45,675	44,224	43,383	45,425	47,484	48,311	45,622	43,801	43,699	42,411	42,582	45,387
Texas	167,968	170,892	172,067	170,305	172,814	165,276	159,129	158,882	160,863	167,767	175,361	183,821	176,637	172,294	173,227	177,039	179,522	188,088
Utah	20,324	20,667	20,534	20,064	19,480	18,877	18,549	19,379	19,671	20,742	22,738	23,644	23,183	23,983	25,800	27,283	30,422	32,702
Vermont	6,773	6,867	6,862	6,700	6,648	6,217	5,967	5,737	5,663	5,820	6,144	5,979	5,539	5,060	5,113	4,997	5,027	5,194
Virginia	66,270	68,203	68,027	67,404	67,515	63,270	59,406	57,215	58,898	60,188	63,149	59,615	54,065	51,614	51,181	50,437	50,395	53,473
Washington	51,101	51,568	50,675	49,670	48,819	46,266	43,984	44,271	44,843	47,232	49,009	47,992	43,551	43,612	45,863	46,527	48,105	51,507
W. Virginia	23,986	23,570	23,197	22,883	22,683	21,658	20,604	20,023	19,877	20,392	20,643	21,527	20,456	19,215	19,253	19,477	19,915	20,913
Wisconsin	71,295	71,288	69,664	67,473	66,236	62,354	60,018	57,105	56,836	56,284	56,566	54,182	48,905	47,107	48,872	48871	48,792	51,422
Wyoming	6,074	6,102	6,150	6,120	6,163	5,869	5,658	5,812	5,995	6,502	7,015	7,300	7,390	7,426	7,896	8,285	8,242	9,063
Dist. of Col.	5,045	5,681	5,448	5,107	4,606	4,490	4,309	3,882	3,547	3,470	3,480	3,280	2,891	2,562	2,372	2,302	2,277	2,337
Total	2,833,353	2,844,871	2,790,136	2,744,081	2,712,160	2,568,534	2,441,616	2,365,634	2,327,723	2,376,722	2,450,040	2,409,803	2,221,800	2,130,812	2,157,465	2,149,545	2,170,233	2,279,201

Note: Projections include graduates of public high schools only, except in Alaska, Delaware, and Maryland, where graduates of nonpublic high schools also are included.

SOURCE: WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION

NOTE

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